

The AC-130: The Answer for Marine Corps Close Air Support Problems of Tomorrow

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"The AC-130: The Answer for Marine Corps Close Air Support
Problems of Tomorrow"

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To

Major Shaw, CG 7

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In order to continue effectively providing Close Air Support (CAS) in future operations, the Marine Corps must focus on two emerging types of engagements: Military Operations on Urban Terrain (MOUT) and non-littoral warfare. The current migration trend of the world's population toward urbanized areasⁱ make the probability of the Marine Corps conducting MOUT operations extremely high. Additionally, recent operations have proven that battlefields may be non-littoral in nature requiring forces to deploy far greater distances to reach their objective. These rising battle landscapes will demand specific traits out of future CAS aircraft. MOUT environments will dictate that CAS platforms provide the precise firepower needed in restrictive urban settings as well as greater endurance in order to gain and maintain superior situational awareness. Non-littoral engagements will require airframes with longer range to support ship to objective maneuvers hundreds of miles from the sea. Fortunately for the Marine Corps, this airframe does not need development because it is already in existence. The AC-130, with its precise firepower, superior endurance and long range is the airframe of choice to provide CAS for the battles of the future and therefore should be acquired by the Marine Corps.

Global Urbanization = MOUT

Recent forecasts based on population statistics and the worldwide migration trend from agrarian to industrialized societies predict that 85 percent of the world's population will reside in urbanized areas by the year 2025. As the world trend toward urbanization increases, the military significance of cities is likely to increase proportionally.ⁱⁱ

Urbanized areas often become the source of many problems because they are "where radical ideas ferment, dissenters find allies, mixtures of people cause ethnic friction, and discontented groups receive media attention."ⁱⁱⁱ As these troubled areas escalate into global hotspots, it is inevitable that Marines will be called upon with increasing frequency to bring peace to such areas. These MOUT environments pose serious problems for aviation assets tasked with providing CAS. U.S. rules of engagement typically mandate minimal collateral damage to urban structures and non-combatants. Aviation ordinance delivered must be lethal enough to destroy the intended target yet precise enough to limit collateral damage.

Lethal and Precise Firepower of the AC-130

Aviation munitions in MOUT environments are often required to penetrate buildings and vehicles destroying everything inside while not damaging the surrounding environment. The AC-130 carries an impressive array of weapons that can cause such destruction. Major Mike Leffler in his Marine Corps Gazette article "Need CAS? Call 'spooky': The role of the AC-130U

gunship in CAS" describes the weaponry the following way:

. . . the U-model features a 25mm Gatling gun capable of wreaking havoc on exposed troops. Automatically fed ammunition, the gun is capable of shooting 1,800 rounds a minute. The 25mm gun is trainable while shooting, giving the gunship the ability to cover a larger area while firing. For larger targets, the aircraft has a 40mm Bofors cannon. Perhaps the most accurate weapon on the gunship, the only limit on its rate of fire is the speed of the shooter pressing a button. Finally, for those hard to get targets, the U-model features the reliable 105mm howitzer. The 105mm is particularly effective against heavier vehicles, prepared positions, or troops in buildings.^{iv}

With these weapons, the AC-130 is capable of destroying any target that may present itself in a MOUT scenario.

While the gunship brings impressive firepower to the battlefield, the precision with which these targets are prosecuted is what makes it exceptional for MOUT engagements.

Again, Major Leffler describes the AC-130:

To ensure accuracy, computers synchronize all three guns into the aircraft inertial navigation system and Global Positioning System. The fire control officer tweaks the guns based on wind speed, direction, altitude, slant range, and the characteristics of a particular target. Hydraulically mounted, the guns are able to train on even moving targets with incredible accuracy. Moreover, the gunship has the capability to target moving helicopters by putting a moving target mode into the computers. While the two smaller guns use standard ammunition, the 105mm howitzer uses the full complement of artillery rounds: white phosphorus, point detonation, delayed penetration, and proximity fused.^v

Consider a hypothetical MOUT scenario in which a Marine unit is receiving fire from an enemy sniper located in a building surrounded by non-combatants and historically significant

structures. An AC-130 hovering overhead is called in to destroy the target. With its precise firepower, the AC-130 surgically destroys the single room housing the sniper. This precision significantly reduces the amount of collateral damage while still providing the requisite CAS.

Superior Situational Awareness provided by the AC-130

MOUT, like all combat environments, is a constantly changing and chaotic environment. While providing CAS in such an environment, the ability to gain and maintain situational awareness is indispensable. The AC-130's endurance enables this superior situational awareness, by allowing it to remain overhead the target for five to six hours without refueling. The endurance of current Marine Corps CAS assets requires aircraft to swap out two to three times to refuel during the same time period. Because more aircraft are required for continuous CAS coverage, the situational awareness must continuously be rebuilt each time a new aircraft arrives. With the gunship on station, the situational awareness is built and maintained by the same crew. In a rapidly changing environment such as MOUT, sound situational awareness is paramount.

Reaching the Non-Littorals

Initial battles in Operation Enduring Freedom presented unique difficulties to the Marine Corps. The objective area in this operation was hundreds of miles from the coastline where

the Marine forces were embarked. Transporting Marines four hundred miles inland to secure a foothold at Camp Rhino in Afghanistan with the current inventory of Marine Corps aircraft was no small feat. While this movement was a resounding success and a milestone in Marine Corps history, future operations carried out in a more hostile environment might not bring about such favorable results.

Acquisition of aircraft such as the MV-22 will help prepare the Marine Corps for future non-littoral scenarios, but will also highlight other shortcomings. Current aviation assets cannot provide the requisite escort to protect the movement of MV-22s to a non-littoral landing zone. For instance, a ship to objective maneuver of MV-22s four hundred miles from the sea (eight hundred miles round trip) will require approximately five hours of flight time.^{vi} Current fixed wing inventory do not have the necessary endurance to remain with the flight and would need replacing every one and a half to two hours to allow for refueling. Similarly, current rotary wing assets do not possess the endurance nor the speed to keep pace with the MV-22's 240-knot cruising airspeed^{vii}. An absence of an MV-22 escort aircraft will pose a serious problem in future non-littoral engagements.

The AC-130's range of 2200 miles^{viii} and similar cruising speeds to the MV-22 make it a perfect fit for the escort mission. The comparable profiles of the AC-130 and the MV-22

would enable fewer aircraft to support the same evolution because the gunship could accompany the entire movement. In addition to providing security to the flight, the AC-130 could remain on station once the Marines are inserted to provide firepower as the landing zone perimeter is secured and further offensive operations are conducted.

The Marine Corps will inevitably be faced with non-littoral battles again in the future. Aircraft such as the MV-22 will enable Marines to reach the objective, but in order to survive in such an environment they will need an aircraft such as the AC-130 to provide protection.

Current Factors Restricting USMC AC-130 Acquisition

Facility Space

The current Marine Corps Air Station infrastructure cannot support an additional squadron of AC-130's. Because the air stations lack the facilities to house these aircraft, additional hangar space and ramp space would need to be constructed, both of which are extremely costly. However, as the fleet of KC-130 F and R models are being replaced with KC-130 J models, the Fleet Replacement Squadron (FRS) VMGRT-253 will be eliminated. The hangar space being vacated by the FRS would provide hangar and ramp space for any AC-130s acquired.

Cost

There are three viable options for procuring the AC-130 and options range from 140 to 200 million dollars per aircraft. First, the retiring fleet of KC-130 F models could be modified at a cost of 140 million dollars per aircraft^{ix}. The aging airframe of the KC-130F, however, does not make this a viable option. The second alternative is to purchase KC-130J models, for 200 million dollars per aircraft^x. While this option would provide the newest technology, the increase in purchase price would prohibit such an acquisition. The final and most viable option is to convert retiring KC-130 R models at a cost of 140 million dollars each^{xi}. The current conversion from KC-130 F and R model aircraft to the new KC-130J model will make the R models readily available and the airframes are new enough to withstand such a transition.

Even with the R model conversion, the cost of acquiring a fleet of AC-130s is steep. In order to limit its initial expenditure, the Marine Corps could begin with the modification of eight aircraft. This would allow for two on call AC-130s per Marine Expeditionary Force (MEF) and still allow for continuous training and maintenance cycles. If structured like the current fleet of KC-130's the AC-130s range would make it available anywhere in the world with 96 hours notice.

Manpower

An AC-130 squadron based on the aforementioned eight-plane model would require approximately 480 Marines^{xii}. While some of the aircrew and maintenance personnel could be fielded from the current pool of KC-130 manpower with minimal additional training, new military occupational specialties (MOSs) would have to be created, placing a further drain on the already low manpower states in the Marine Corps.

All is not lost, however, as the Global War on Terror has brought about recent changes in manpower from the Defense Department. Christian Lowe writing for the Marine Corps Times reported, "The 2005 Defense Authorization Act gave the Pentagon the authority to boost the size of the Marine Corps by 9,000 through 2009. Marine officials have not made a decision to add the full 9,000 authorized, but are keeping the option open."^{xiii} Currently, there are plans for only 3,000 of 9,000 authorized. While "most of the new troops will be used to fill gaps in existing units"^{xiv} certainly there is room in the remaining 6,000 for the 480 required in the six to eight plane model. When the benefits this platform will provide for future battles are considered, they will certainly outweigh the cost of such a relatively small increase in manpower.

High Demand / Low Density Asset

One of the challenges to using an aircraft such as the AC-130 is its "high demand and low density" (HD/LD) status. The

usefulness of the AC-130 coupled with the few number of aircraft in existence will make this a HD/LD asset. Once deployed in a joint operating area, it would be employed by the Joint Forces Air Component Commander (JFACC) in support of all forces in that theater and would not be available exclusively to the Marine Corps. While this may be true some of the time, the advantage of having a platform such as the AC-130 and what it will enable Marine forces to accomplish in future battles far outweigh the cost of occasionally sharing this asset with other services.

Summary

The global population trend toward urbanization and recent battles occurring far from the shoreline, make the forecast for future battles clear. The battlespace of the future will include a form of MOUT and battles may occur far from the littoral regions. These realities dictate procurement of future CAS platforms with specific attributes. The AC-130, with its precise firepower, superior endurance and long range will meet the needs of these conflict scenarios and therefore should be acquired by the Marine Corps.

Notes

ⁱ United States Marine Corps, *Marine Corps Warfighting Publication 3-35.3, Military Operations on Urbanized Terrain (MOUT)*, 1-1.

ⁱⁱ United States Marine Corps, 1-1.

ⁱⁱⁱ United States Marine Corps, 1-1.

^{iv} Michael T. Leffler, "Need CAS? Call 'spooky': The role of the AC-130U gunship in CAS," *Marine Corps Gazette*, May 2000, 72.

^v Leffler, 72.

^{vi} "MV-22 Osprey," *Headquarters United States Marine Corps Factfile*, 30 Dec 1997, <<http://www.hqmc.usmc.mil/factfile.nsf/0/006111164d72c407852562de00720540?OpenDocument>> (2 January 2005).

^{vii} "MV-22 Osprey," *Headquarters United States Marine Corps Factfile*

^{viii} Major Adam Holmes, "AC-130 Gunship Procurement," briefing presented to the Commandant of the Marine Corps, Headquarters Marine Corps, 23 January 2002.

^{ix} Holmes briefing, 23 January 2002.

^x Holmes briefing, 23 January 2002.

^{xi} Holmes briefing, 23 January 2002.

^{xii} Holmes briefing, 23 January 2002.

^{xiii} Christian Lowe, "Help is on the Way," *Marine Corps Times* 24 January 2005, 14.

^{xiv} Lowe 14.

Bibliography

"Boeing AC-130U Gunship Team Prepared For Possible Marine Corps Request," *Defense Daily International*, 30 Nov 2001, 1.

"Commandant Suggests AC-130 For Marine Corps" *Defense Daily International*. 16 Nov 2001, 1.

Holmes, Major Adam. "AC-130 Gunship Procurement," briefing presented to the Commandant of the Marine Corps, Headquarters Marine Corps, 23 January 2002.

Leffler, Michael T. "Need CAS? Call 'spooky': The role of the AC-130U gunship in CAS," *Marine Corps Gazette*, May 2000, 72.

Lowe, Christian. "Help is on the Way," *Marine Corps Times*, 24 January 2005, 14.

"Marines, SOCOM Plan Greater Cooperation," *Defense Daily International*, 1 Mar 2002, 1.

"MV-22 Osprey," *Headquarters United States Marine Corps Factfile*, 30 Dec 1997, <<http://www.hqmc.usmc.mil/factfile.nsf/0/006111164d72c407852562de00720540?OpenDocument>> (2 January 2005).

Tuttle, Rich. "Northrop Grumman in line for Viper Strike/AC-130 demo," *Aerospace Daily & Defense Report*, 9 Dec 2004, 4.

United States Marine Corps. *Marine Corps Warfighting Publication 3-35.3, Military Operations on Urbanized Terrain (MOUT)*, 26 April 1998, 1-1.

"Viper Strike - Laser Guided Weapon for UAVs," *Defense Update - International Online Defense Magazine*, 9 April 2003. <<http://www.defense-update.com/directory/viper-strike.htm>> (2 January 2005).
